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National Security Research Facilities: Challenges and Strategies for Partnerships and Assessment

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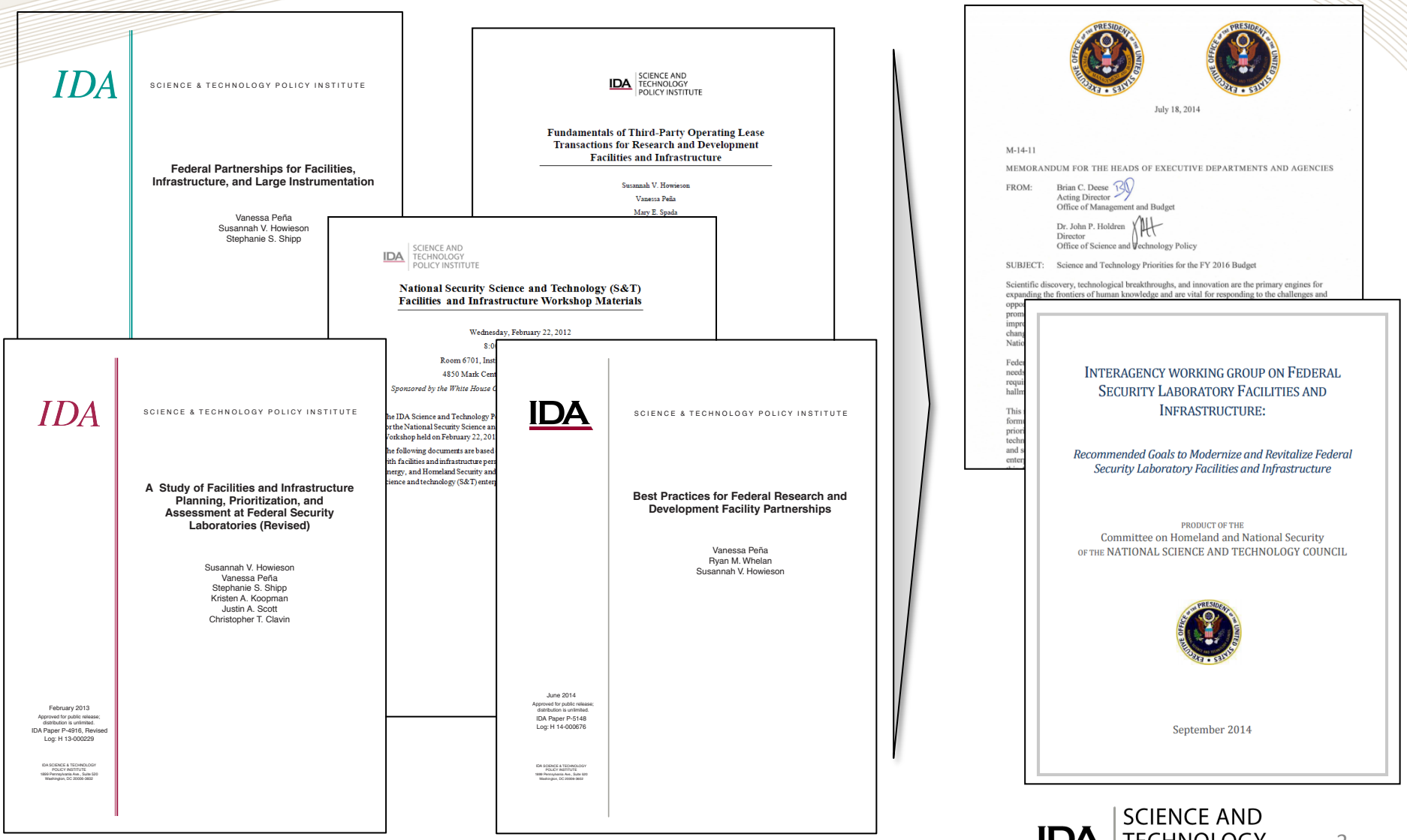
Background

- Importance of National Security Laboratories
  - Integral role in allowing Federal personnel to meet national and homeland security missions
  - Substantial investment is needed to maintain and modernize these facilities, but the precise scope of needs remains unknown
- Facilities and Infrastructure
  - R&D buildings and fixed capital equipment (research centers, laboratories, reactors, particle accelerators)
  - Major equipment and instrumentation for R&D (movable equipment, such as spectrometers, detectors, and other instruments)
  - Infrastructure (utility plants, roads)

Brookhaven's NSLS-II

LANL's Sanitary Effluent Reclamation Facility

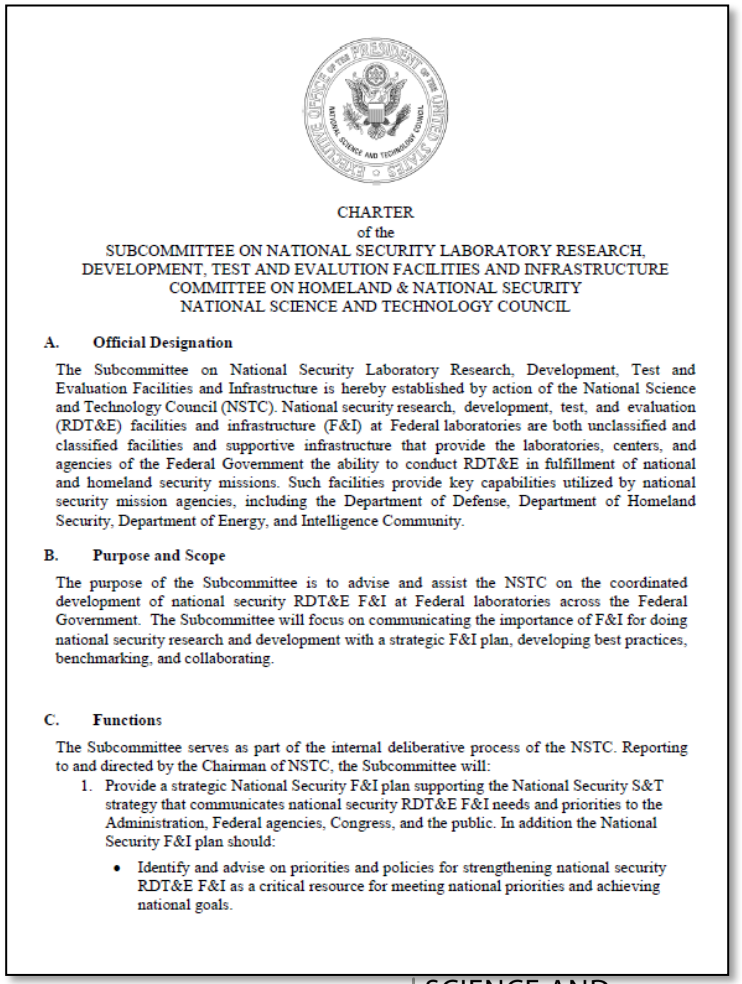
STPI Federal R&D Facility Studies



Publications available at STPI's website: https://www.ida.org/en/STPI/ExploreSTPIResearch/STPIPublications.aspx

Subcommittee on National Security Laboratory Facilities under the National Science and Technology Council (NSTC)

- Chartered March 2015 and will sunset in January 2017 with option for renewal
- Rotating chair and deputy chair from
  - Department of Defense
  - Department of Energy
  - Department of Homeland Security
  - Office of the Director of National Intelligence
- Recognizing large supportive infrastructure for national security R&D, members will also include
  - National Science Foundation
  - National Institutes of Health
  - Department of Agriculture
  - National Aeronautics and Space Administration
  - General Services Administration



CHARTER
of the
SUBCOMMITTEE ON NATIONAL SECURITY LABORATORY RESEARCH, DEVELOPMENT, TEST AND EVALUTION FACILITIES AND INFRASTRUCTURE
COMMITTEE ON HOMELAND & NATIONAL SECURITY
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

A. Official Designation

The Subcommittee on National Security Laboratory Research, Development, Test and Evaluation Facilities and Infrastructure is hereby established by action of the National Science and Technology Council (NSTC). National security research, development, test, and evaluation (RDT&E) facilities and infrastructure (F&I) at Federal laboratories are both unclassified and classified facilities and supportive infrastructure that provide the laboratories, centers, and agencies of the Federal Government the ability to conduct RDT&E in fulfillment of national and homeland security missions. Such facilities provide key capabilities utilized by national security mission agencies, including the Department of Defense, Department of Homeland Security, Department of Energy, and Intelligence Community.

B. Purpose and Scope

The purpose of the Subcommittee is to advise and assist the NSTC on the coordinated development of national security RDT&E F&I at Federal laboratories across the Federal Government. The Subcommittee will focus on communicating the importance of F&I for doing national security research and development with a strategic F&I plan, developing best practices, benchmarking, and collaborating.

C. Functions

The Subcommittee serves as part of the internal deliberative process of the NSTC. Reporting to and directed by the Chairman of NSTC, the Subcommittee will:

1. Provide a strategic National Security F&I plan supporting the National Security S&T strategy that communicates national security RDT&E F&I needs and priorities to the Administration, Federal agencies, Congress, and the public. In addition the National Security F&I plan should:
   - Identify and advise on priorities and policies for strengthening national security RDT&E F&I as a critical resource for meeting national priorities and achieving national goals.

NSTC Subcommittee Functions

- Articulate priorities through strategic and implementation plans
- Facilitate coordination of Federal R&D facility investments
- Serve as a coordination point for data and definitional standards and partnerships
- Share practices and recommend policies to improve revitalization of the Federal R&D facility enterprise

STRATEGIES FOR FACILITY PARTNERSHIPS

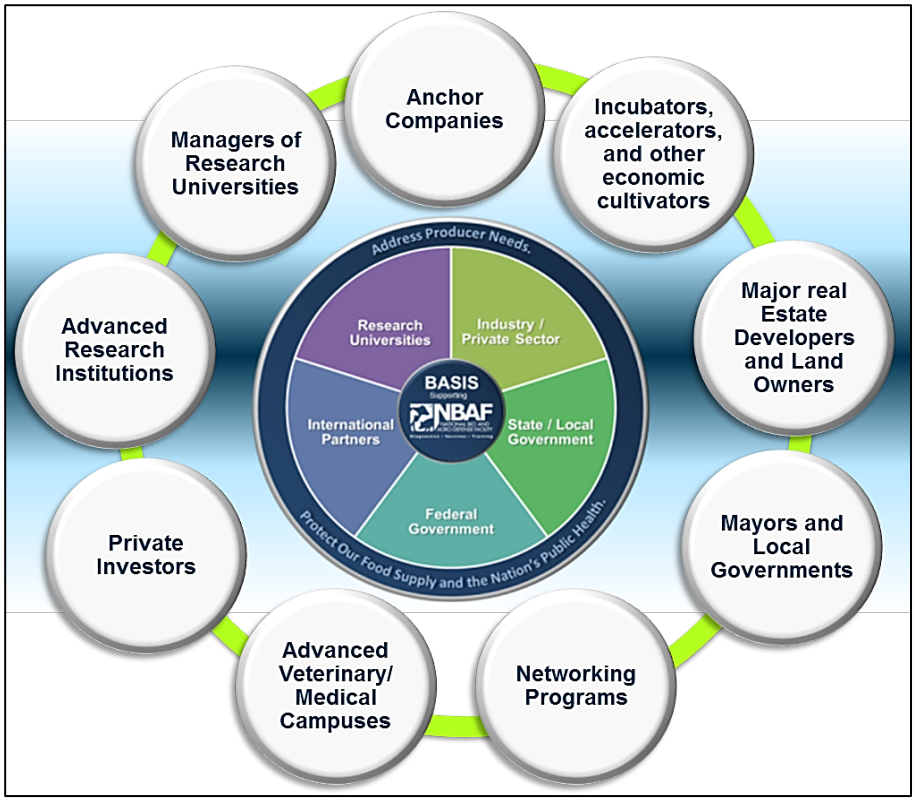
Partnership Challenges

- Lack of strategy on use of mixed funding approaches
- Mixed perceptions on cost-effectiveness of and a lack of shared best practices to leverage resources from other sectors
- Need to increase public awareness of expertise, capabilities, equipment, and facilities across laboratories

Example: National Bio-Agro Defense Facility (NBAF) Innovation Ecosystem

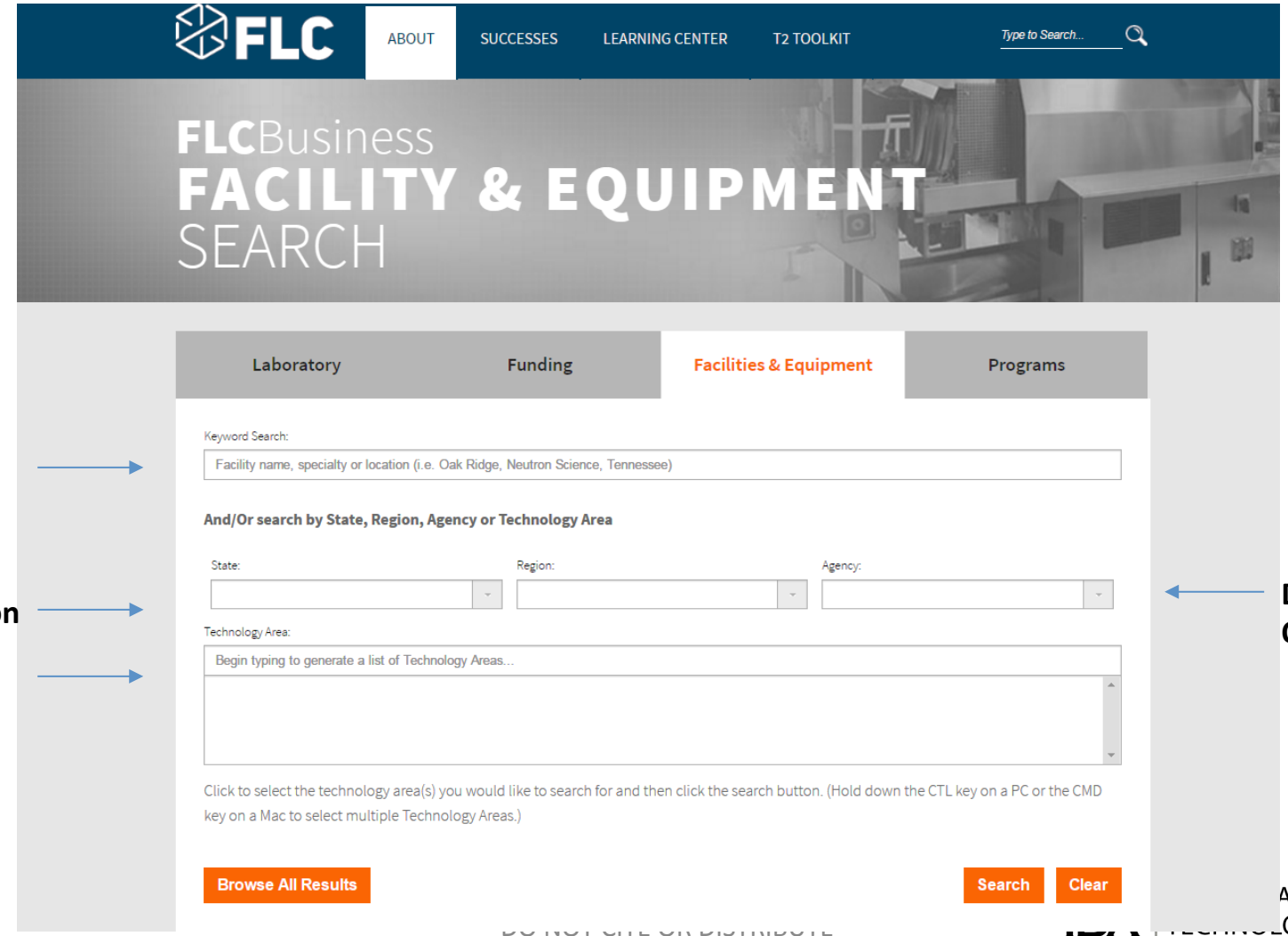
- Partnership with DHS, USDA, Kansas State University, & City of Manhattan, with involvement of interest groups (e.g., Manhattan Chamber of Commerce)
- DHS is building a $1.2B facility in Manhattan, Kansas to be operational 2020
- Kansas organizations gifted $307M to DHS

Bio/Agro Security Innovation System (BASIS) Engagement Model



U.S. Department of Homeland Security, "NBAF Program Executive Office: Partnerships," received from DHS S&T Office of National Laboratories.

Example: Federal Laboratory Consortium (FLC) Search Database



Keyword Search

State/Region

Technology Area Search

Dep't./Agency Organization

STRATEGIES FOR ASSESSMENT

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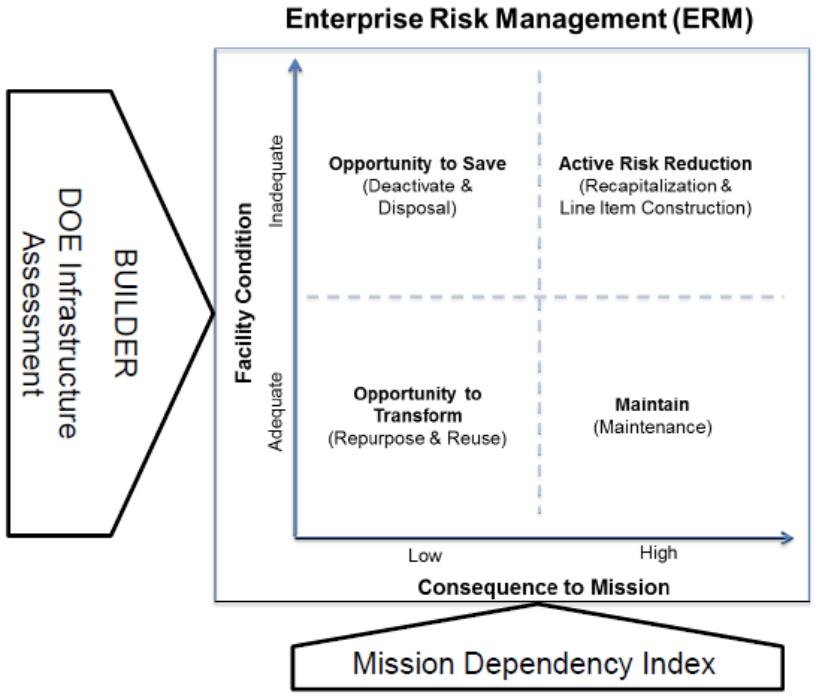
Data and Metrics Challenges

- Difficulty evaluating and communicating laboratory facility impacts on agency missions
- Lack of transparency in facility assessments and prioritization of facility investments
- Inaccurate or meaningless data collected informs investments decisions, i.e. traditional metrics are not linked to impact and value to mission

Example of NNSA's Strategy to Improve the Use of Data and Metrics

- National Nuclear Security Administration's Enterprise Risk Management model considers facility condition and mission impact
  - Mission Dependency Index to determine consequence to mission
  - BUILDER* management system (developed by Army Corps of Engineers) to standardize calculations for facility condition across enterprise
- Helps articulate priorities to engage in further dialogue regarding needs and inform facility investment decisions



Source: Haldeman, R. Maintaining the Infrastructure to Support the Nuclear Security Enterprise. Presented to the Commission to Review the Effectiveness of the National Energy Laboratories. February 24, 2015.

* BUILDER is a data management system developed by the Army Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory and endorsed by the DOD for use across all military departments. BUILDER serves as an inventory tool and provides information on condition, functionality, mission dependency, and general F&I information to generate work schedules for future maintenance. ERDC. 2006. BUILDER Condition Assessment Manual for Building Component-Sections. Champaign, IL: ERDC. http://sms.cecer.army.mil/Shared%20Documents/Downloads/BUILDER/builder3_conditionassessment_full.pdf.

Conclusion

- NSTC Subcommittee provides an interagency forum to discuss challenges and share potential solutions to facility partnerships and assessment
- Developing guidance, e.g., “Best Practices,” for facility partnerships and assessment tools
- With FLC, refining National Security laboratory inventory and developing a standardized capabilities search to better communicate value of enterprise

Thank you. Questions?

Contact

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Studies Available on STPI website

Google search “STPI Publications”

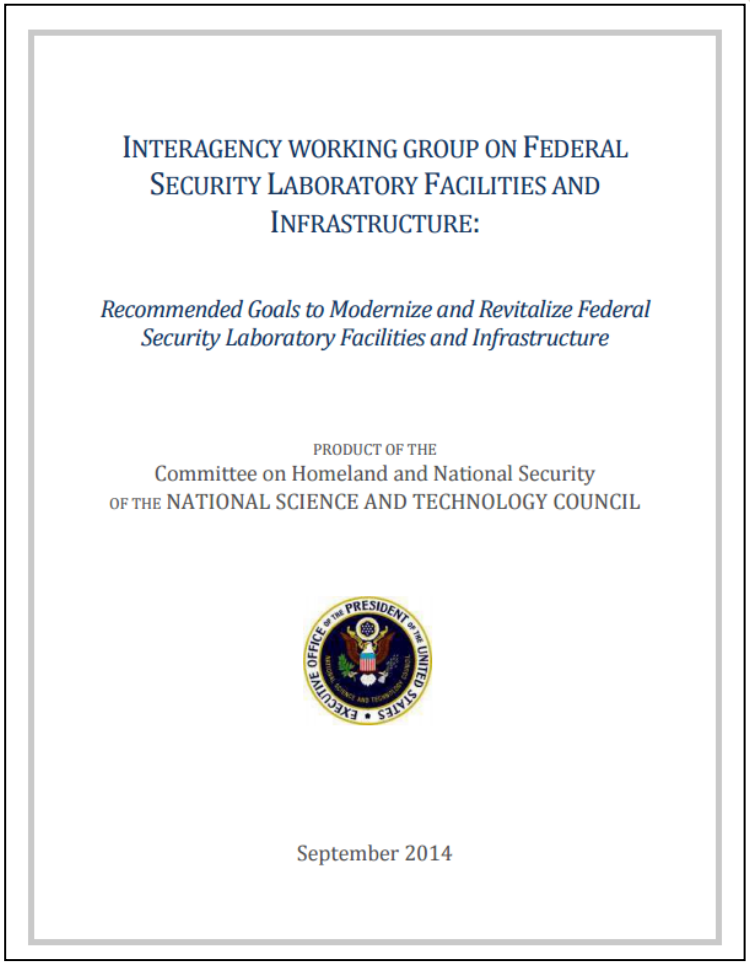
BACKUP

Origins of NSTC Interagency Coordination

NSTC Working Group for Federal Security F&I

Study Questions

- How can Federal agencies improve coordination of capital projects?
- What are strategic priorities to guide Federal investments in F&I?
  - How can revisions to legislation and regulations facilitate improved planning and management of F&I?
  - How can Federal agencies better guide investments towards common goals and complementary missions?
  - What new financing models and mechanisms could be established?



INTERAGENCY WORKING GROUP ON FEDERAL SECURITY LABORATORY FACILITIES AND INFRASTRUCTURE:

Recommended Goals to Modernize and Revitalize Federal Security Laboratory Facilities and Infrastructure

PRODUCT OF THE
Committee on Homeland and National Security
OF THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

September 2014

https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/nstc_-_federal_security_laboratory_facility_and_infrastructure_-_sept._2014.pdf

Six Strategic Goals (1)

- **GOAL 1: Establish an interagency group to enable and support coordination of national security F&I.**

  The interagency group would help identify and share current capabilities across agencies and realize the improvements necessary to maximize the value of national security F&I to the Federal Government and the Nation.

- **GOAL 2: Adopt and refine metrics, processes, and tools to accurately capture condition, mission impact, and effectiveness of national security F&I.**

  Needed methods include developing and refining accurate quantitative measures that link the condition of national security F&I to mission impact.

- **GOAL 3: Create an online catalog of national security F&I to effectively communicate the value and opportunities for shared use associated with Federal resources and capabilities.**

  The catalog should be supported by developing an Executive-level directive to establish and continuously update information on available national security F&I.

Six Strategic Goals (2)

- **GOAL 4: Articulate F&I priorities in national security science and technology strategies to better connect technical priorities with the necessary F&I.**

  Language inserted into Executive-level national security S&T strategies could specify and encourage ways for agencies to communicate capabilities, develop partnerships, pursue effective funding mechanisms, and improve messaging of national security F&I capabilities.

- **GOAL 5: Facilitate the development of best practices for national security F&I partnerships among agencies based on lessons learned from past experiences across the Federal Government.**

  Coordination among agencies and laboratories is necessary to identify common mission needs that can serve as the basis for developing future partnerships.

- **GOAL 6: Address existing legislative and regulatory barriers to funding national security F&I.**

  Solutions include clarifying regulations and policies on using interagency cooperative funding and recapitalization funds and expanding current private financing mechanisms for national security F&I.

NSTC Subcommittee Interagency Working Groups

Inventory & Communications (I&C) Working Group

Chair: George Korch, HHS

I&C WG Purpose

- The I&C WG's goals are to:
  - Create an online catalog of national security F&I to effectively communicate the value and opportunities for shared use associated with Federal resources and capabilities
  - Articulate F&I priorities in national security science and technology strategies to better connect technical priorities with the necessary F&I
- The I&C WG will be chartered to:
  1. Effectively communicate values and opportunities of national security F&I
  2. Inform prioritization and decision-making on current and future national security F&I investments
  3. Raise awareness of national security S&T directions and priorities

I&C WG Annual Plan

Create online catalog of national security F&I

- Establish a definition of national security RDT&E F&I
- Initiate a data call to request inventory
- Develop a comprehensive online searchable catalog that describes uses and capabilities of national security RDT&E F&I
- Develop an Executive-level directive for agencies/ labs to provide continuous/up-to-date information

Articulate F&I priorities in national security S&T strategies

- Develop consistent communication of accomplishments and future needs
- Develop informational products to inform range of stakeholders
- Collaborate with other WGs to identify common priorities and promote shared partnerships

Data, Metrics and Tools (DATMET) Working Group

Chairs: Jeff Underwood, NNSA & Alex Kurien, GSA

DATMET WG Purpose

- The DATMET WG's goals are to create a system of metrics that quantify the reliance of mission on infrastructure, measure risk of infrastructure condition to mission, and support risk-informed senior management decisions
- The DATMET WG will be chartered to:
  1. Develop standardized definitions to facilitate review and assessment of national security laboratory RDT&E F&I
  2. Review and coordinate the use of data and metrics and identify practices in effectively capturing the value of RDT&E F&I to missions
  3. Identify effective ways to consolidate data and metrics to better understand the national security Federal RDT&E F&I portfolio
  4. Facilitate the use of national security RDT&E F&I data and metrics into Department/Agency prioritization processes

DATMET WG Annual Plan

Develop a standardized lexicon for RDT&E F&I data

- Compare with GSA F&I definitions and databases
- What are RDT&E F&I metrics that could be used and how will they be used (for what purpose and by who)?
- What are metrics (e.g., publications and patents, researchers, external users/collaborators, etc.) unique to RDTE facilities?

Evaluate and develop best practices for metrics to capture value of RDT&E F&I to mission

- Collect appropriate metrics to demonstrate needs
- Assess examples of innovative measures used across Federal agencies to assess value to mission
- Assess and develop best practices on the use of data management systems to measure, assess, and forecast needs and investments in national security RDT&E F&I

Partnerships Working Group

Chairs: Jamie Johnson, DHS & David Retland, ODNI

Partnerships WG Purpose

- The Partnerships WG's goals are to
  - Identify and develop opportunities that support the formation of national security F&I partnerships to better utilize federal resources
  - Promote and provide guidance on partnerships
- The Partnerships WG will be chartered to:
  1. Facilitate the development of best practices for F&I partnerships
  2. Improve planning, coordination and communication to identify common mission capabilities that serve as the basis for partnerships
  3. Develop common methodology and/or shared funding mechanisms to form partnerships within the Federal government or between the Federal government and other entities, such as industry, State and local governments, and academia

Partnerships WG Annual Plan

Develop guidance and frameworks to form partnerships

- Update the report on RDT&E Best Practices for Federal F&I Partnerships
- Create templates for partnership agreements
- Evaluate and assess ways to engage in partnerships, including governance structures (e.g., examples of user facilities), public-private partnerships, and others

Improve planning, coordination & communication to facilitate partnerships

- Collect and share national security RDT&E F&I activities
- Understand each agencies F&I processes, budget cycles, and capital plans
- Identify potential partnerships through shared information
- Serve as a central point of coordination for new RDT&E F&I partnerships